APPENDIX 13

Map 13 – Partners in Flight Habitat Classes

Terrestrial Wildlife Habitat Descriptions

There are 9 terrestrial wildlife habitats found in the Gold Belt TMP planning area. Descriptions of these habitats are as follows:

Riparian: This habitat type consists of subalpine riparian shrubland and foothills riparian forests. Within the planning area there are approximately 25,000 acres of riparian habitat, with 3,000 acres (12 %) administered by BLM. Subalpine riparian shrublands are rare in the planning area due to the higher elevations in which they are found. These ecosystems may be extensive in broad glacial valleys, along stream systems and other wetlands from 8,000-12,000 feet elevation. They have relatively low plant diversity; comprised mostly of willows, shrubby cinquefoil, and bog birch. The low plant diversity along with the short growing season usually results in low avian species diversity as well. The dense willow thickets, however, provide many protected nest sites and an abundance of insects. This results in a high density of nesting birds in a given area. The foothills riparian forests are distributed along stream systems in the foothills, lower mountains and mountain parks from 5,500-10,000 feet elevation. In some areas the riparian forest is dominated by a deciduous component, especially narrowleaf cottonwood, a variety of willow species, box elder, mountain alder and river birch. In other areas, Colorado blue spruce and other coniferous trees dominate, and conifers often form a mixture with cottonwoods. The understory of these systems is typically rich, with a wide variety of shrubs and herbaceous plants. The *Colorado Breeding Bird Atlas* reported that foothills riparian forests dominated by deciduous trees comprised nearly 85 % of all foothills riparian forests, while conifer-dominated systems comprised just over 15 %. These two systems also exhibited somewhat different avian communities. Riparian areas represent a transition zone between the aquatic ecosystem and the drier uplands. The riparian zones are well defined, unique, and highly productive areas that are sensitive to disturbance. In most western riparian systems, however, 75 % of the bird species use riparian areas during some part of their life cycle.

Grassland: Shortgrass communities within the planning area are dominated by the low-growing, warm-season grass, blue grama. Western wheatgrass is also present along with taller vegetation, including prickly-pear and cholla cactus. Mixed grass (needle-and-thread, side-oats grama) communities occur locally, as do mountain grasslands (Arizona fescue and mountain muhly). Grasslands make up approximately 104,000 acres in the planning area, with about 11,000 acres (11 %) administered by BLM. Grasslands are typically intermixed within other habitat types such as pinyon-juniper and ponderosa pine forests. Large expanses of open grassland habitat are rare in the planning area.

Mountain Shrubland: Mountain shrubland is typically found in the transition zone between semi-arid pinyon-juniper woodlands and the forests above. Mountain shrubland

in the planning area consists primarily of Gambel oak and other associated shrubs, including serviceberry, mountain mahogany, chokecherry, and snowberry. Gambel oak is a large shrub or small tree and is probably the best known of the mountain shrubs. The mountain shrubland habitat is widely distributed throughout the Gold Belt planning area. It occupies about 59,000 acres of land in the planning area, of which 12,000 acres (20 %) occur on lands managed by BLM. Gambel oak has been described as a climax indicator in a number of habitat types. It reproduces by suckering, and very large areas can be populated by clones. Gambel oak is extremely fire tolerant, vigorously re-sprouting from stem bases or from underground tubers and rhizomes following fire. It can recover to original heights from a fire in 30 to 40 years. A healthy stand of Gambel oak contains shrubs of varying heights and has robust native bunchgrasses and forbs growing between them and relatively little bare ground. Mountain mahogany is the most common shrub species associated with Gambel oak in the planning area. It grows with and adjacent to oak but on drier sites. Chokecherry is a large shrub common to mountain shrublands but it rarely dominates large areas. Snowberry is a lower stature species that often grows with Gambel oak. Other shrubs occurring in mountain shrubland communities (e.g., squaw currant, curl-leaf mountain mahogany, and mountain spray) do not become widespread dominants.

Pinyon-Juniper: Pinyon-juniper habitat extends over large areas in the planning area. The habitat type covers 106,000 acres in the planning area, with 49,000 acres (46 %) administered by BLM. The pinyon-juniper habitat type is an evergreen woodland situated above desert or grassland vegetation and below mountain shrub. Elevations range from 4,500-7,500 feet. Colorado pinyon pine is the predominant pinyon species in the area and Rocky Mountain juniper is also dominant. Proportions of juniper and pinyon within this habitat type vary greatly and pure stands of either tree may occur. Typically, as elevation increases pinyon dominance increases, juniper density decreases, total tree density increases, and trees become larger. Pinyons drop out completely at the lowest elevations. Depending on site variables, pinyon-juniper may range from an openly spaced savanna to a closed forest. Pinyon-juniper understories vary from completely open to quite dense, the densest understories occurring in open canopy woodland/oak communities. Soils underlying pinyon-juniper often are shallow, rocky and low in fertility.

Pinyon-juniper habitats in the planning area are generally mixed with shrub species such as Gambel oak and mountain mahogany and therefore provide browse for mule deer, elk and bighorn sheep. The more open, rocky habitats favored by bighorn sheep are generally within the pinyon-juniper zone. Elk have recently moved into pure pinyon-juniper habitats and in some areas remain year round. The pinyon-juniper woodland is an important wintering habitat for mule deer.

Mixed Conifer: This forest type is found at elevations of 5,600-10,000 feet, where it is transitional between ponderosa pine and spruce-fir forests. At lower elevations, ponderosa pines are common, with Douglas-fir on north-facing slopes and in drainages. Mixed conifer gives way to spruce-fir at higher elevations. Aspen stands are an important component, and so pervasive as to be considered an integral part of the mixed

conifer forest. Other tree species present include blue spruce, white fir, lodgepole pine, limber pine, and bristlecone pine. Approximately 5,000 acres of mixed conifer is administered by BLM in the planning area out of a total of 19,000 acres. The stand- and landscape-level structure of mixed conifer forests is shaped by fire, blowdown, and insect infestations (western spruce budworm, Douglas-fir bark beetle, and Douglas-fir tussock moth).

Ponderosa Pine: In Colorado, ponderosa pine is found at 5,600-9,000 feet. It is a very dry and warm forest, with less than 25 inches of precipitation annually. Mature ponderosa pine forests on dry sites consist of widely spaced trees, with a grassy ground cover that is maintained by frequent low-intensity fires. On more mesic sites, typical of the ponderosa pine habitat of the Gold Belt planning area, ponderosa stands are dense, and closed-canopy stands are common. This vegetation type covers an area of 129,000 acres in the planning area, with BLM managing 38,000 acres (29 %). Ponderosa pines are the largest conifers in Colorado and Gambel oak is a common component of the understory, typically in a shrubby form. Other common understory shrubs include mountain mahogany and wax currant. Tree species sometimes found mixed with ponderosa pine are junipers, pinyon, aspen, white fir, and Douglas-fir.

Ponderosa pine distribution at local scales is influenced by soil moisture and fire. Ponderosa forests are shaped primarily by fire, affecting species composition and forest structure. Ponderosa forests evolved with frequent, low-intensity fires that cleared understory vegetation and other tree species with lower fire tolerance but left the large ponderosa pines with their thick bark unharmed. Heavy grazing in the 1800s and early 1900s reduced and made discontinuous the grass fuels that fed the low-intensity ground fires. As a result, fires have become far less frequent and shrubs and saplings have crowded the once open stands. Another natural disturbance agent shaping ponderosa pine forests is the mountain pine beetle, killing many ponderosa pines. Large expanses of pure old growth ponderosa pine forest are rare in the planning area. Past logging activity for the mining and railroad industries removed many older trees. Consequently, most ponderosa forests in the planning area are young in age.

Aspen: Aspen is not abundant, only occurring at higher elevations in the northern portion of the planning area. There are about 13,000 acres (3 %) of aspen-dominated woodlands in the planning area, with approximately 2,000 acres (15 %) administered by BLM. Aspen grows under a wide variety of environmental conditions on upland sites. Required site conditions include long growing seasons, deep snow, and annual precipitation exceeding 16-20 inches. In the Rockies, the best stand development occurs on well-drained, sandy to silt-loam soils and on southerly to easterly exposures. Aspen-dominated woodlands are highly valued for summer forage for livestock grazing, watershed protective cover, timber harvest, firewood, and scenic beauty. Aspen occurs primarily as an early seral species, eventually seral being replaced by shade-tolerant late-seral conifers. In Colorado, it is a major constituent of Englemann spruce-subalpine fir, Douglas-fir, white fir, blue spruce, and ponderosa pine forests. At lower elevations typical of the Gold Belt planning area, it is often found as stringers along riparian corridors, or in small mesic islands surrounded by drier pine uplands. Following severe

disturbance, such as stand-replacement fires or clear cutting, aspen usually dominates sites for many decades. The value of aspen habitats to wildlife is directly related to the structural diversity of the canopy and undergrowth. Stands with a predominantly aspen overstory allow sufficient light to reach the forest floor to support multi-layered herb and shrub understories, and are often more lush than adjacent conifer stands. As aspen dominance gives way to conifer dominance, less light reaches the forest floor, and understory diversity and abundance declines. In the planning area, the most common understory shrubs are snowberry, western serviceberry, chokecherry, and rose. The most common forbs include geranium, valerian, yarrow, and dandelion.

Spruce-Fir: Spruce-fir forest is present at 9,000-12,000 feet in elevation. Engelmann spruce and subalpine fir are the dominant tree species. Engelmann spruce is found without subalpine fir at the lower elevations but only on cool, sheltered sites. Aspen is often mixed in at lower and middle elevations, and limber pine and bristlecone pine are present at middle and higher elevations. Most precipitation is in the form of snow, remaining on the ground well into spring. Because spruce-fir forests are cooler and wetter than other forests, fire is comparatively uncommon, with perhaps several hundred years passing between fires at a given location. As a result, these forests produce large trees. Understory vegetation can vary from sparse to dense. Common juniper, shrubby cinquefoil, and Colorado currant are common components. The primary disturbance agents are blowdown and insect infestations (Engelmann spruce beetle and western spruce budworm). When fires do occur, they are often stand-replacement fires, fed by the dense trees and understory, although moisture and other factors result in patchy dispersal across the landscape. Recovery from disturbance is slow due to the cold winters and a short, cool growing season. Small amounts of spruce-fir forest are found in the planning area (51,000 acres), with even less occurring on BLM lands (18,300 acres).

Alpine Tundra: The alpine tundra habitat type is not well represented with only 2,000 acres within the planning area. BLM administers approximately 300 acres of this habitat type, most of it occurring on the slopes of Pikes Peak northeast of Cripple Creek. Alpine tundra is comprised of a variety of vegetative communities adapted to specific soils, slope, aspect, moisture, and other environmental influences at high elevations. Tundra habitats are a complex mosaic of boulder fields, fell fields, cliff/rock, wet and dry meadows, and snowfields. Alpine tundra habitat is characterized by shallow soils, short growing seasons, low temperatures, high solar radiation, and high winds. Most precipitation in the planning area alpine habitat falls as snow, often in late winter or early spring, and is distributed non-uniformly because of winds. Because of the severe climate, few vertebrate species, including birds, are able to breed in this habitat.